



University of Hawaii at Manoa

Environmental Center
Crawford 317 • 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 948-7361

May 22, 1984

RR:0075

Review of

DLNR Rules on Chapter 184 Designation and Regulation of Geothermal Resource Subzones

By
Doak C. Cox
Lee J. Hannah

Overall these draft rules seem well prepared. However, two items of substantive concern and several wording changes seem worthy of attention.

Landowner-initiated subzone requests

One substantive concern relates to landowner-initiated requests for subzoning. Act 296 specifies that such requests shall be considered by the board, but does not specify the procedure under which these requests are to be handled. According to the rules as presently proposed, the DLNR would handle these requests on an individual basis, independent of the county-wide assessment. Another approach, and one perhaps more consistent with the intent of Act 296, would be to consider a landowner-initiated request simply by including the area covered in the request in the next county assessment. This approach would be better suited to achieving a balance of the criteria outlined in 13-184-6. A landowner request handled individually would be more difficult to place in the larger context of a balancing of impacts between areas as required by law, especially before the first county assessment is made. To avoid undue hardship on landowner applicants, county-by-county assessment might be undertaken on a more frequent interval than 5 years. Because this approach would avoid repetitive individual case hearings, the cost and effort of more frequent county-by-county reviews would be largely offset. Whichever approach to landowner-initiated requests is taken, some revision of the proposed rules should be undertaken to make it clear that the boards decision in these cases is based on a balancing of the criteria of 13-184-6 between various areas on a county-wide basis, regardless of the avenue of initiation.

"Minimal" environmental impact

The second item of substantive concern is the reference to 'minimal' environmental impact as a criterion for establishing a geothermal zone under 13-184-6(4). Minimal environmental impact is a difficult concept to substantiate, and therefore more precise wording of this criteria would seem desirable. One possibility is to replace 'minimal' with

'insignificant', thus equating the criterion with state standard for determining whether or not an Environmental Impact Statement is required for a particular action. Another approach would be to define the 'minimal' level as the lowest level of impacts among available areas. This could be accomplished by replacing the word 'minimal' in 13-184-6(4) with the phrase "the lowest relative to other eligible resource areas". This change would clarify the standard of 'minimal' and substantially improve the proposed rules.

Other comments, keyed by section number, are:

13-184-6(1)

Although it is appropriate to speak of exploration and discovery of geothermal resources, it is inappropriate to speak of their production. What is meant in the subsection is the exploitation of geothermal resources or the production of energy from them. A proven ("known") potential for practical development of the geothermal resources would, of course, be grounds for establishment of a geothermal resource subzone if other criteria are met. However, the potential cannot be proven in most cases without exploration. The criterion of a "plausible" potential might be appropriate if it could be certain that developers would not go to the expense of exploration without some reasonable prospect of proving the profitability of development. However, the criterion would be better and more simply phrased as:

That there is a geothermal resource in the area whose practicable development has been proven or is likely.

Although the practicability of development of a geothermal resource depends on the use that will be made of the energy that will be developed in it, it is appropriate to distinguish in the criteria between the characteristics of the resource (criterion (1)) and the potential for the use of the energy (criterion (2)). It may also be appropriate to distinguish between "direct" uses of energy, i.e. those made within the subzone in which the energy is developed from a geothermal resource, and "indirect" uses of the energy, i.e. those made if energy exported from the subzone. However, as now phrased, the criterion would include among "indirect" uses only those of electrical energy generated. As the criterion is now phrased, a use of thermal energy outside the subzone would be excluded from consideration, because such a use would not be direct (in the subzone), and because it is thermal energy not electrical energy that is exported from the subzone. The export of energy from a subzone will generally be most practicable in electrical form, but export as thermal energy (steam or warm water) or even possibly chemical form (fuel) should not be excluded. Although the production of electrical energy from geothermal resources seems a major concern in Act 296, the act requires consideration of the potential for the production and utilization of energy generally. The criterion would be better phrased as:

That there is a proven or likely prospect for utilization of the energy that would be produced from the geothermal resources of the area, either within the subzone or outside it.

13-184-6(3)

Although geological hazards may be negligible in some geothermal areas, there is none in which there is not some geologic hazard. The geologic hazards to geothermal development facilities may be minimized in some areas by appropriate location and design of the facilities, and aspects of the design intended to minimize the hazards may be referred to as "geologic engineering design". However, to make the criteria general, it would be better phrased:

That geologic hazards to any geothermal development facilities in the area, or to facilities in the area using the energy developed, are negligible or can adequately be minimized by location and design of the facilities.

134-184-4(4), p. 5

The aim should not be to minimize "social and environmental impacts". Minimization of detrimental social and environmental impacts is an appropriate aim, and geothermal resource development will rarely result in beneficial impacts on the natural environment. However, the aim of geothermal development is to produce economic benefits, and these benefits constitute social impacts. If distinction is to be made between environmental impacts (in the sense of natural environmental impacts) and social impacts, the criterion would be better phrased:

That detrimental social and environmental impacts of the development of geothermal resources with the area will be minimal or can be mitigated by appropriate siting and design of geothermal wells and related facilities.

13-184-6(5)

Compatibility, or at least substantial compatability, of geothermal resource development with existing and permitted local uses is an appropriate and important criterion. In any area, however, the permitted uses that should be taken into consideration are not solely those permitted under county general plans and land use policies, but those permitted in the State land-use districts in which the area falls. To the criterion as now phrased there should at least be added the phrase "or the state land use districts to which the surrounding lands are assigned."

Even with this addition, the possible degree of incompatibility with the existing or permitted uses in the area of the proposed subzone itself could not be considered in deciding whether to establish subzone. In our opinion, incompatibilities within the area of the proposed subzone should be taken into consideration. Hence we suggest rewording of the criterion:

That the development of geothermal resources within the area will be compatible with existing uses of the surrounding land and with uses of the area and surrounding land permitted under the general plan or land use policies of the county and in the state land use districts to which the area and surrounding land are assigned.

13-184-8, pp. 5-6

What is intended is not "A description of the proposed area" but "A description of the area of the proposed subzone".

13-184-9, p. 6

The overall criterion for designation of a subzone is stated here that the board "finds the proposed area possesses an acceptable balance of the criteria set forth in Section 13-184-6". What is meant by the "proposed area" is the "area of the proposed subzone", but the phrasing is at best awkward and although Act 296 speaks of a "balance", the criteria are not opposed; hence balancing them is not involved.